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10/080,017	02/19/2002	Dinesh Nair	5150-61801	7742

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EXAMINER

SUN, XIUQIN

ART UNIT	PAPER NUMBER
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2863

DATE MAILED: 11/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/080,017

Applicant(s)

NAIR ET AL.

Examiner

Xiuqin Sun

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 13-29 and 31-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 13-29 and 31-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Upon further consideration, the allowable subject matter of claims 12 and 30 as indicated in the last Office Action mailed on 06/20/2003 has been withdrawn and replaced by the following office action. Any inconvenience to the Applicant(s) is regretted.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 4, 5-7, 11, 13-15, 18-20, 24-28, 35, 36, 42 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marrion et al. (U.S. Pat. No. 6408429) in view of Perez et al. (U.S. Pub. No. 2002/0116666 A1), Yusuf et al. (U.S. Pat. No. 6256199), Shaffer et al. (U.S. Pat. No. 5966427), Mori et al. (U.S. Pat. No. 5821627) and Stumme (U.S. Pat. No. 5272438).

Marrion et al. teach a method for performing machine vision inspection of a display device (see Abstract; and col. 1, lines 31-57), the method comprising: configuring a display inspection algorithm comprising a plurality of display inspection functions operable to perform machine vision tests on the display

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device (col. 4, lines 37-46; col. 8, lines 12-55; and col. 9, lines 21-31); programmatically generating a test executive sequence that implements the display inspection algorithm (col. 4, lines 47-67; col. 5, lines 1-7; col. 8, lines 56-67; and col. 9, lines 1-20); and executing the test executive sequence to perform the machine vision tests on the display device (Fig. 9; col. 17, lines 1-2, lines 50-67 and col. 18, lines 1-65). The teachings of Marrion et al. further include: said programmatically generating the test executive sequence comprises programmatically including a plurality of test executive steps for display inspection in the test executive sequence, wherein each test executive step for display inspection corresponds to a display inspection function in the display inspection algorithm (Fig. 5; col. 8, lines 7-67 and col. 9, lines 1-31); the programmatically generated test executive sequence also includes one or more test executive steps to perform initialization of one of a hardware device and the display inspection functions (col. 16, lines 10-28); said programmatically generating the test executive sequence comprises programmatically including a plurality of test executive steps for display inspection in the test executive sequence, wherein said executing the test executive sequence comprises executing the plurality of test executive steps for display inspection to perform the machine vision tests on the display device (col. 15, lines 34-51; col. 16, lines 47-54 and lines 60-67); said executing the test executive sequence further comprises: acquiring one or more images of the display device; and analyzing the one or more images (col. 1, lines 30-57; col. 6, lines 1-32 and lines 39-48);

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the display device comprises an LCD device (col. 1, lines 30-47); and said display device is included as a component in a product (col. 1, lines 30-47).

Marrion et al. further teach a system for performing display inspection, the system comprising: a computer system which includes a processor and a memory medium (col. 7, lines 1-15; col. 9, lines 32-38, lines 48-52; and col. 10, lines 18-26), wherein the memory medium stores: a library of display inspection functions (col. 8, lines 7-11, lines 56-67; col. 9, lines 1-6; col. 15, lines 13-24 and lines 34-51); a test configurator which is executable to select a set of display inspection functions in response to user input (col. 8, lines 56-67 and col. 9, lines 1-31); a plurality of test executive steps, wherein each of the plurality of test executive steps is operable to perform display inspection (col. 11, lines 11-67; and col. 12, lines 10-67); an image acquisition device coupled to the computer system, wherein the image acquisition device is operable to acquire an image of a display device being inspected (col. 6, lines 1-9); wherein the test configurator is useable to programmatically generate a test executive sequence to perform an inspection of a display device, wherein the test executive sequence includes a set of test executive steps operable to invoke at least one of the selected display inspection functions (col. 4, lines 47-67; col. 5, lines 1-7; col. 8, lines 56-67; col. 9, lines 1-20, col. 17, lines 50-67 and col. 18, lines 1-65).

Marrion et al. further teach a method for inspecting a display device, wherein the display inspection algorithm includes one or more display inspection functions operable to perform one or more image processing tests on the display device; wherein said executing the test executive sequence to perform the tests

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on the display device includes executing one or more test executive steps in the test executive sequence to perform the one or more image processing tests on the display device (col. 1, lines 30-57; co. 6, lines 1-32, lines 39-48; col. 7, lines 16-28 and lines 44-51).

Marrion et al. do not mention explicitly that: said programmatically generating the test executive sequence comprises generating the test executive sequence without receiving user input specifying the test executive sequence; each test executive step for display inspection is configured to call one of the display inspection functions as an external code module; said programmatically generating the test executive sequence comprises programmatically including a plurality of test executive steps for display inspection in the test executive sequence, wherein the method further comprises adding one or more additional test executive steps to the test executive sequence in response to user input; said a plurality of display inspection functions are operable to perform any tests on the display device; and said test executive sequence is operable to perform the tests on the display device. Marrion et al. also do not mention explicitly that: said one or more additional test executive steps comprises non-machine vision tests, such as: a shock test, a noise-vibration-harshness (NVH) test, an audio test, a mechanical test, a battery test, and an electrical test of the display device.

Perez et al. teach a system and method for testing a group of related products, comprising: programmatically generating a test executive sequence without receiving user input specifying the test executive sequence (Fig. 3; sections 0062 and 0066); said programmatically generating the test executive

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sequence comprises programmatically including a plurality of test executive steps for display inspection in the test executive sequence, wherein the method further comprises adding one or more additional test executive steps to the test executive sequence in response to user input (sections 0025, 0027 and 0080); a plurality of test functions operable to perform different tests on one or more units under test (UUTs), and a test executive sequence operable to perform or control a test of one or more UUTs (sections 0002-0004 and 0020); and each test executive step is configured to call one of the test functions as an external code module (0054); said display inspection algorithm includes one or more display inspection functions operable to perform one or more tests on the display device (sections 0054, 0058, 0065, 0067, 0068 and 0074); wherein said executing the test executive sequence to perform the tests on the display device includes executing one or more test executive steps in the test executive sequence to perform the one or more tests on the display device (sections 0054, 0058, 0065, 0067, 0068 and 0074).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teachings of Perez et al. in the system of Marrion et al. in order to provide a generic test executive software that allows to programmatically create, configure, and/or control test sequence execution for various test applications (Perez et al., section 0004).

Yusuf et al. teach a technique for performing a shock test and a noise-vibration-harshness test of an electronic device (col. 5, lines 9-23).

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Yusuf et al. in the system of Marrion et al. in order to provide a generic test executive software that is capable of testing the physical stress, thermal stress and vibration characteristics of an unit under test (UUT) (Yusuf et al., col. 5, lines 9-23).

Shaffer et al. teach a technique for performing an audio test on an electronic device (col. 8, lines 1-18).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Shaffer et al. in the system of Marrion et al. in order to provide a generic test executive software that is capable of testing the audio performance characteristics of an UUT (Shaffer et al., col. 2, lines 44-67).

Mori et al. suggest to perform a mechanical test and a electrical test on a display device (col. 2, lines 8-31; col.5, lines 26-36 and col. 30, lines 14-27).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Mori et al. in the system of Marrion et al. in order to provide a generic test executive software that is capable of testing the mechanical and electrical characteristics of a display device (Mori et al., col. 29, lines 15-39).

Stumme teaches a technique for performing battery test on an electronic device (col. 3, lines 32-59).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Stumme in the system of

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Marrion et al. in order to provide a generic test executive software that is capable of checking the battery source performance condition within an electronic device (Stumme, abstract).

4. Claims 3, 8-10, 21-23 and 37-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marrion et al. in view of Perez et al., Yusuf et al., Shaffer et al., Mori et al. and Stumme, as applied to claim 1 above, and further in view of Masuda et al. (U.S. Pub. No. 2002/0122582 A1).

The combination of Marrion et al., Perez et al., Yusuf et al., Shaffer et al., Mori et al. and Stumme teaches a system and method that includes the subject matter discussed above except: displaying an image on a display, wherein the image corresponds to a display device; displaying a graphical user interface of a display inspection test configurator, wherein the graphical user interface of the display inspection test configurator enables a user to interactively specify the display inspection algorithm, and receiving user input specifying the display inspection algorithm to the graphical user interface of the display inspection test configurator, wherein the user input specifies the plurality of display inspection functions; configuring one or more of the display inspection functions in the display inspection algorithm, wherein, for each display inspection function, configuring the display inspection function comprises: displaying a specialized graphical user interface for configuring the display inspection function; and receiving user input to the graphical user interface to customize operation of the display inspection function; wherein the graphical user interface enables the user to specify one or more parameters of the display inspection function, and wherein

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said configuring one or more of the display inspection functions comprises configuring the display inspection functions without specifying program code.

Masuda et al. disclose a programming apparatus of a visual inspection program, and teach the steps and means of displaying an image on a display, wherein the image corresponds to the product to be inspected; displaying a graphical user interface of a product inspection test configurator, wherein the graphical user interface of the product inspection test configurator enables a user to interactively specify the product inspection algorithm, and receiving user input specifying the product inspection algorithm to the graphical user interface of the product inspection test configurator, wherein the user input specifies the plurality of product inspection functions (sections 0009, 0042 and 0061); configuring one or more of the product inspection functions in the product inspection algorithm, wherein, for each product inspection function, configuring the product inspection function comprises: displaying a specialized graphical user interface for configuring the product inspection function; and receiving user input to the graphical user interface to customize operation of the product inspection function, wherein the graphical user interface enables the user to specify one or more parameters of the product inspection function, and wherein said configuring one or more of the product inspection functions comprises configuring the product inspection functions without specifying program code (Figs. 4, 5, 11A-B; sections 0009, 0042, 0051, 0052, and 0061).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Masuda et al. in the

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system of Marrion et al. in order to provide the user with a visual guidance of input operation for configuring said test executive sequence for said inspection application (Masuda et al., section 0042).

5. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marrion et al. in view of Perez et al., Yusuf et al., Shaffer et al., Mori et al. and Stumme, as applied to claim 1 above.

The combination of Marrion et al., Perez et al., Yusuf et al., Shaffer et al., Mori et al. and Stumme teaches a method that includes the subject matter discussed above except: the display device comprises an OLED device.

It is however obvious that Marrion's definition of a display device (col. 1, lines 30-47) is broad enough to include a display such as an OLED (organic light emitting diode). It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply the Marrion method and system to an OLED device in order to perform a machine vision inspection on said OLED device.

6. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marrion et al. in view of Perez et al., Yusuf et al., Shaffer et al., Mori et al. and Stumme, as applied to claim 1 above, and further in view of Downen et al. (U.S. Pat. No. 6177955).

The combination of Marrion et al., Perez et al., Yusuf et al., Shaffer et al., Mori et al. and Stumme teaches a method that includes the subject matter discussed above except: the display device comprises a flat panel display device.

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Downen et al. teach a visual display inspection system, wherein the display device comprises a flat panel display device (col. 1, lines 12-24; col. 2, lines 55-67 and col. 3, lines 1-2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Downen et al. in the combination of Marrion et al., Perez et al., Yusuf et al., Shaffer et al., Mori et al. and Stumme in order to provide a method for performing machine vision inspection on a flat panel display device (Downen et al., col. 1, lines 12-24).

7. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marrion et al. in view of Perez et al., Yusuf et al., Shaffer et al., Mori et al. and Stumme, as applied to claim 1 above, and further in view of Campbell et al. (U.S. Pat. No. 6212496).

The combination of Marrion et al., Perez et al., Yusuf et al., Shaffer et al., Mori et al. and Stumme teaches a method that includes the subject matter discussed above except: said display inspection algorithm includes one or more display inspection functions operable to perform one or more audio tests on the display device; wherein said executing the test executive sequence to perform the tests on the display device includes executing one or more test executive steps in the test executive sequence to perform the one or more audio tests on the display device

Campbell et al. teach a method and system for performing a audio test on a digital telephone (see Abstract, Figs. 2 and 3; col. 3, lines 51-67 and col. 4, lines 1-5).

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Campbell et al. in the combination of Marrion et al., Perez et al., Yusuf et al., Shaffer et al., Mori et al. and Stumme in order to provide a method for performing controlled inspection on a display device that includes a audio component (Campbell et al., abstract).

8. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marrion et al. in view of Perez et al., Yusuf et al., Shaffer et al., Mori et al. and Stumme, as applied to claim 1 above, and further in view of Konuma (U.S. Pat. No. 5798814).

The combination of Marrion et al., Perez et al., Yusuf et al., Shaffer et al., Mori et al. and Stumme teaches a method that includes the subject matter discussed above except: said display inspection algorithm includes one or more display inspection functions operable to perform one or more shock tests on the display device; wherein said executing the test executive sequence to perform the tests on the display device includes executing one or more test executive steps in the test executive sequence to perform the one or more shock tests on the display device.

Konuma teaches a technique for performing a shock test on a LCD (col. 6, lines 10-27).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Konuma in the combination of Marrion et al., Perez et al., Yusuf et al., Shaffer et al., Mori et al. and Stumme in order to provide a method for performing a inspection on a

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display device, including a thermal shock inspection (Konuma, col. 6, lines 10-27).

9. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marrion et al., Perez et al., Yusuf et al., Shaffer et al., Mori et al. and Stumme, as applied to claim 24 above, and further in view of Hsieh et al. (U.S. Pat. No. 4963824).

The combination of Marrion et al., Perez et al., Yusuf et al., Shaffer et al., Mori et al. and Stumme teaches a method that includes the subject matter discussed above except: said display inspection algorithm includes one or more display inspection functions operable to perform one or more mechanical tests on the display device; wherein said executing the test executive sequence to perform the tests on the display device includes executing one or more test executive steps in the test executive sequence to perform the one or more mechanical tests on the display device.

Hsieh et al. teach a technique for performing a mechanical test of an electronic circuit board (abstract and col. 2, lines 11-27).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Hsieh et al. in the combination of Marrion et al., Perez et al., Yusuf et al., Shaffer et al., Mori et al. and Stumme in order to provide a method for performing an inspection on a display device, including a mechanical testing of the components mounted on the display device (Hsieh et al., abstract).

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10. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marrion et al., Perez et al., Yusuf et al., Shaffer et al., Mori et al. and Stumme, as applied to claim 24 above, and further in view of Bush (U.S. Pat. No. 4756017).

The combination of Marrion et al., Perez et al., Yusuf et al., Shaffer et al., Mori et al. and Stumme teaches a method that includes the subject matter discussed above except: said display inspection algorithm includes one or more display inspection functions operable to perform one or more battery tests on the display device; wherein said executing the test executive sequence to perform the tests on the display device includes executing one or more test executive steps in the test executive sequence to perform the one or more battery tests on the display device.

Bush teaches a technique for performing a battery test of a LED (abstract and col. 5, lines 38-45).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Bush in the combination of Marrion et al., Perez et al., Yusuf et al., Shaffer et al., Mori et al. and Stumme in order to provide a method for performing a inspection on a display device, including testing the battery used by the display device (Bush, abstract).

11. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marrion et al., Perez et al., Yusuf et al., Shaffer et al., Mori et al. and Stumme, as applied to claim 24 above, and further in view of Park (U.S. Pat. No. 6353466).

The combination of Marrion et al., Perez et al., Yusuf et al., Shaffer et al., Mori et al. and Stumme teaches a method that includes the subject matter

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discussed above except: said display inspection algorithm includes one or more display inspection functions operable to perform one or more electrical tests on the display device; wherein said executing the test executive sequence to perform the tests on the display device includes executing one or more test executive steps in the test executive sequence to perform the one or more electrical tests on the display device.

Park teaches a technique for performing an electrical test of a LED (col. 1, lines 38-67 and col. 2, lines 1-12).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Park in the combination of Marrion et al., Perez et al., Yusuf et al., Shaffer et al., Mori et al. and Stumme in order to provide a method for performing a inspection on a LCD display device, including a electrical testing of the LCD (Park, col. 1, lines 38-67).

Response to Arguments

12. Applicant's arguments with respect to claims 1-10, 13-29 and 31-43 have been considered but are moot in view of the new ground(s) of rejection.

Claims 1-10, 13-29 and 31-43 are rejected as new art references (U.S. Pat. No. 6256199 to Yusuf et al., U.S. Pat. No. 5966427 to Shaffer et al., U.S. Pat. No. 5821627 to Mori et al. and U.S. Pat. No. 5272438 to Stumme) have been found to teach various non-machine vision tests on an electronic device such as a display device. For more detailed response, please refer to sections 3-11 set forth above in this Office Action.

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Contact Information


13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xiuqin Sun whose telephone number is (703)305-3467. The examiner can normally be reached on 7:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (703)308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

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X.S

October 21, 2003


John Barlow
Supervisory Patent Examiner
Technology Center 2600